# Appendix C

# Determination of Wetland Credits

## 1.0 INTRODUCTION

This portion of the Charleston District's Guidelines for Preparing a Compensatory Mitigation Plan establishes a method to evaluate aquatic resources that are being adversely impacted by activities authorized by Department of the Army (DA) permits and aquatic resources that are being retored, enhanced, or preserved by a proposed compensatory mitigation plan. This general method of evaluating compensatory mitigation proposals was first adopted by the Charleston District in 1993 and has been updated to ensure that it is consistent with the 2008 Mitigation Rule.

As discussed throughout this local guidance document, the purchase of mitigation credits from an approved mitigation bank or an in-lieu fee program within the same watershed as the project site is presumed to be environmentally preferable to permittee-responsible mitigation (PRM). If the appropriate number and type of mitigation credits are available from an approved mitigation bank or in-lieu fee program, the permittee will be required to: 1) purchase the necessary mitigation credits, or 2) prepare a PRM plan that fully offsets the proposed impacts to aquatic resources and document why the proposed PRM plan is environmentally preferable to the purchase of mitigation credits.

The purchase of mitigation credits is normally the most cost effective method of providing compensatory mitigation for projects that result in minimal impacts to aquatic resources, such as projects authorized by Nationwide Permits. Prior to submitting a conceptual mitigation plan, permit applicants should consider the overall cost and the time required to prepare and implement a PRM plan. Permit applicants are encouraged to schedule a pre-application meeting with a Corps project manager if they have specific questions about their proposed project or compensatory mitigation alternatives.

Please note this local guidance document is marked as a working draft. As additional experience is gained, it is possible that individual factors and/or other aspects of these tables and worksheets will be reviewed and updated. Permit applicants should always use the most recent edition of this local guidance document. Sample projects are included in Section 5.0 to help demonstrate how a permit applicant should complete the necessary mitigation worksheets.

## 2.0. DETERMINATION OF WETLAND MITIGATION CREDITS

The worksheets, tables, and information included in this section should be used to calculate the number of mitigation credits required to offset adverse impacts to waters of the United States and the number of credits generated by a proposed compensatory mitigation plan. These calculations do not represent an exact or statistically proven scientific method of replacing aquatic resource functions and services. This method is based on the past experience and the best professional judgment of regulatory and resource agency staff. It is intended to establish a clear and consistent method for use by permit applicants and regulators.

Simply stated, the Proposed Mitigation Credits (PMC) must be equal to or greater than the Required Mitigation Credits (RMC). In addition, at least 50% of the required mitigation credits must be generated by restoration and/or enhancement activities.

**Proposed Mitigation Credits (PMC) ≥ Required Mitigation Credits (RMC)**

and,

**Proposed Restoration and Enhancement ≥ 50% RMC**

When a proposed project results in adverse impacts to more than one wetland system the required mitigation credits for each adverse impact are calculated separately on the worksheet and added together to determine the total required mitigation credits. Likewise, when a compensatory mitigation plan restores, enhances, and/or protects more than one aquatic resource, the mitigation credits generated by each mitigation activity is calculated separately on the worksheet. The mitigation credits generated by all of the mitigation activities are added together to determine whether the total PMC is greater than the total RMC, and the mitigation credits generated by restoration and enhancement activities are added together to determine whether they generate more than 50% of the total RMC.

## 3.0. DEFINITION OF FACTORS USED IN TABLES AND WORKSHEETS.

**Credit Schedule** is a factor that recognizes both the timing and the likelihood of the successful implementation of a proposed mitigation plan. Compensatory mitigation plans should typically be implemented in advance of or concurrent with the activity causing the authorized impacts to the maximum extent practicable. Related terms include:

**Before.** Compensatory mitigation provided by released credits from an approved Mitigation Bank or In-Lieu Fee Program. For permittee-responsible mitigation plans, the compensatory mitigation activities (land clearing, vegetative plantings, hydrologic improvements, etc.) are completed before the adverse impacts occur.

**Concurrent**. The majority (>50%) of the mitigation activities (land clearing, vegetative plantings, hydrologic improvements, etc.) are conducted at the same time as the adverse impacts.

**After**. The proposed mitigation plan is approved prior to the adverse impacts. However, the majority (>50%) of the mitigation activities (land clearing, vegetative plantings, hydrologic improvements, site protection, etc.) are not scheduled to occur until after the adverse impacts.

**Not Applicable**. The proposed mitigation plan is reviewed and approved after the adverse impacts occur. For example, an after-the-fact compensatory mitigation plan that is developed to resolve an enforcement action.

**Cumulative Impact** is defined by the National Environmental Policy Act as the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The total acreage of permanent and temporary wetland impacts are added together to determine the value (0.1 - 2.0) of the cumulative impact factor for a proposed project. The same value is used to calculate the RMC for each adverse impact associated with the proposed project.

**Dominant Impact** categories are defined as follows.

*Clear* means to remove vegetation without disturbing the existing topography of the soils.

*Draining* means ditching, channelization, or excavation that results in the removal of water from an aquatic area causing the area, or a portion of the aquatic area, to change over time to a non-aquatic area or a different type of aquatic area.

*Dredge* means to dig, gather, pull out, or excavate from waters of the United States.

*Fill* means depositing material used for the primary purpose of replacing an aquatic resource with dry land or changing the bottom elevation of a water body or wetland.

*Impound* means to collect or confine the flow of a riverine system by means of a dike, embankment, or other man made barrier. Impoundments may result in the formation of ponds, lakes, reservoirs, detention basins, etc, or they may limit the reach of high waters, such as levees or flood dikes.

*Shading* means to shelter or screen by intercepting radiated light or heat. Examples of projects causing shading impacts include bridges, piers, and buildings on pilings.

**Duration** means the length of time the adverse impacts are expected to last. For example, if a forested wetland is cleared to construct a temporary access road it will take more than 10 years for a similar forested canopy to develop.

**Existing Condition** means the degree of disturbance relative to the ability of a site to perform its physical, chemical, and biological functions. This factor evaluates site disturbances relative to the existing functional state of the system.

*Fully functional* means that the typical suite of functions attributed to the aquatic resource type are functioning naturally. Existing disturbances do not substantially alter important functions. Examples include: pristine (undisturbed) wetlands, aquatic resources with non-functional ditches or old logging ruts with no effective drainage, or minor selective cutting.

*Partially impaired* means that site disturbances have resulted in partial or full loss of one or more functions typically attributed to the aquatic resource type but functional recovery is expected to occur through natural processes. Examples include: clear-cut wetlands, aquatic areas with ditches that impair but do not eliminate wetland hydrology, or temporarily cleared utility corridors.

*Impaired* means that site disturbances have resulted in the loss of one or more functions typically attributed to the aquatic resource type and functional recovery is unlikely to occur through natural processes. Restoration activities are required to facilitate recovery. Examples include: areas that have been impacted by surface drainage and converted to pine monoculture or agriculture, areas that are severely fragmented, or wetlands within maintained utility corridors.

*Very impaired* means that site disturbances have resulted in the loss of most functions typically attributed to the aquatic resource type and functional recovery would require a significant restoration effort. Examples include: filled areas, excavated areas, or effectively drained wetlands (hydrology removed or significantly altered).

**Kind** is a factor used to compare the functions and services of an impacted aquatic resource with the functions and services of a potential mitigation site. Permit applicants should use the Cowardin system (*Classification of Wetlands and Deepwater Habitats of the United States*) or a similar assessment method to identify the aquatic resource type of each area that will be

adversely impacted by the proposed project and each area that will be restored, enhanced, or protected by the proposed mitigation plan. This information should be used to support your determination regarding Kind.

> **In-kind** means a resource of a similar structural and functional type to the impacted resource.
> **Out-of-kind** means a resource of a different structural and functional type from the impacted resource.

On a case by case basis, mitigation plans that use a watershed approach and demonstrate that a proposed mitigation activity would be "environmentally preferable" may be assigned the numerically greater In-Kind value. Mitigation plans that restore or enhance aquatic resources that are Out-of-Kind must include justification why the proposed mitigation activities offset the adverse impacts associated with the proposed project.

**Location** is a factor used to compare the location of the impacted aquatic resource and the potential mitigation site. Mitigation sites should be located within the same Level III eco-region (coastal plain, sandhills, piedmont, or mountain), the same major drainage basin, and the same 8-digit Hydrologic Unit Code (HUC) as the impacted aquatic resource. Mitigation sites that are not located within the same eco-region will generally not be acceptable. Related terms include:

> **8-Digit HUC** means within the same eco-region and 8-digit HUC as the impacted aquatic resource.
> **Adjacent 8-Digit HUC** means within the same eco-region and in an 8-digit HUC that is adjacent to the 8-Digit HUC where the project impacts will occur.
> **Drainage Basin** means within the same eco-region and major drainage basin as the impacted aquatic resource.
> **Case by Case** exceptions means outside the same eco-region and/or major drainage basin as the impacted aquatic resource, and must be approved by the Division Chief.

**Lost Type** categories are based on the suite of functions that they perform and are defined as follows.

*Type A* means:

- Tidal vegetated systems
- Riverine systems including headwaters and riparian zones
- Intertidal flats
- Shallow subtidal bottoms
- Bottomland hardwoods

*Type B* means:

- Seeps and bogs
- Savannahs and flatwoods
- Depressions
- Pocosins and bays

*Type C* means:

- Man-made lakes and ponds
- Vegetated lake littoral
- Impoundments
- Shallow cove areas

Habitat types that are not categorized will be evaluated on a case-by-case basis with consideration of any comments provided by the resource agencies.

**Net Improvement** (NI) is an evaluation of the net level of functional enhancement or restoration to an aquatic site associated with a proposed mitigation action. This factor is evaluated using a sliding scale, with values ranging from 0.1 for low-level enhancement to 3.0 for excellent restoration.

Examples of low NI include: wildlife habitat enhancement (prescribed burning, water control manipulation), invasive species management, and erosion and sediment control.

Examples of moderate NI include: planting cleared wetlands to speed succession and increase species diversity, hydrological enhancement (breaching causeways or dikes, increasing the number and/or size of culverts in causeways, plugging ditches in impaired wetlands.

Examples of high NI include: fill removal, restoration of native wetland plant communities in converted wetlands, and hydrological restoration (complete causeway or dike removal, plugging and/or removal of ditches in effectively drained wetlands, restoration of braided creek system and natural sheet flows).

**Priority Category** is a factor that recognizes the importance of aquatic resources that provide valuable functions and services on a watershed scale, that occupy important positions in the landscape, or that are considered important because of their rarity. Adverse impacts to primary priority areas should be avoided and minimized to the maximum extent practicable.

*Primary priority* areas include:

- National Estuarine Sanctuaries
- Wild and Scenic Rivers.
- Designated Shellfish Grounds
- Outstanding Resource Waters
- Essential Fish Habitat
- Trout waters
- All tidal waters
- Anadromous fish spawning waters
- State Heritage Trust Preserves
- National Wildlife Refuges
- Waters officially designated by State or Federal agencies as high priority areas
- Old growth climax communities that have unique habitat structural complexity likely to support rare communities of plants or animals

And the following categories of rare aquatic systems:

- Hillside Herb Bog
- Upland Bog
- Atlantic White Cedar Bog
- Depression Meadow
- Piedmont Seepage Forest
- Limestone Sink
- Pine Savannah
- Interdune Pond

*Secondary priority* areas include the following categories of vulnerable or uncommon aquatic systems that do not fall into the designated primary priority category:

- Carolina Bay
- High Elevation Seep
- Bay Forest
- Salt Shrub Thicket
- Waters on the 303(d) list
- Swale Pocosin
- Pond Cypress Pond
- Seepage Pocosin
- Upland Depression Swamp Forest

*Tertiary priority* areas include the following categories of aquatic systems that do not fall into the designated primary priority category:

- Bald Cypress-Tupelo Gum Swamp
- Swamp Tupelo Pond
- Pocosin (other than seepage or swale)
- Bottomland hardwood
- Non-alluvial Swamp Forest
- Pond Pine Woodland
- Pine flatwoods

Note: descriptions of these community types may be found in Appendic C and The Natural Communities of South Carolina, Initial Classification and Description (Nelson, John B).

**Temporal loss** is the time lag between the loss of aquatic resource functions associated with permit activities and the replacement of those functions through restoration or enhancement of aquatic resources at the mitigation site.

**Upland Buffers** help maintain the physical, chemical, and biological integrity of the adjacent aquatic resources. Upland buffers also avoid and minimize potential secondary and cumulative adverse impacts to proposed mitigation sites associated with the future development of the project site and/or surrounding properties. The following issues should be considered when evaluating upland buffers:

- Upland buffers must be established adjacent to all restored, enhanced, or protected wetlands to the maximum extent practicable.
- Upland buffers that are not vegetated (agricultural fields, cleared areas, etc) must be planted with appropriate species and monitored to ensure that a mature, natural community develops within the buffer area.
- Upland buffers that generate compensatory mitigation credits or that are used to obtain a reduction in the number of required mitigation credits may not be subdivided. Lot lines are not allowed within buffer areas.
- Upland buffers may not be acceptable if their potential benefit to the adjacent aquatic resources is of questionable value due to shape, condition, location, inadequate or excessive width, or other reasons.

Upland buffers are considered part of the proposed mitigation activity. If an aquatic resource is being restored or enhanced, the upland buffer counts toward the total restoration or enhancement mitigation credits. If an aquatic resource is being preserved, the upland buffer counts toward the total preservation mitigation credits.

On a case by case basis, an upland buffer that is located adjacent to a preserved area may be considered an enhancement activity if the permit applicant develops appropriate performance standards, monitors the adjacent aquatic resource, and demonstrates the upland buffer has enhanced aquatic resource functions and services within the adjacent wetland system.

Minimum upland buffer widths vary based on factors such as land use and slope. An upland buffer value will be assigned to areas that meet both the minimum width and the minimum average width requirements identified in the tables below. The upland buffer value may be increased if the upland buffer widths are increased to meet the ratios identified in Step 1.

The following steps should be used to determine the upland buffer value that will be used in the Proposed Wetland Mitigation Credit Worksheet:

**Step 1**: Use the Minimum Upland Buffer Width table below to determine the minimum mean buffer width and net improvement value for your proposed or existing land use.

**MINIMUM UPLAND BUFFER WIDTHS AND VALUES FOR WETLANDS**

| Land Use | Required Minimum Width (ft) (ALL) | Required Minimum Average Width (ft) | | |
|---|---|---|---|---|
| | | 1:1 Ratio Buffer Value = 0.5 | 2:1 Ratio Buffer Value = 0.7 | 3:1 Ratio Buffer Value = 1.0 |
| Single Family Residential | 15 | 25 | 50 | 75 |
| Multi-Family Residential | 15 | 40 | 80 | 120 |
| Commercial/ Golf Course/Agricultural | 25 | 50 | 100 | 150 |
| Industrial/Landfill | 25 | 75 | 150 | 225 |
| Other Categories | case-by-case | | | |
| *Widths are based on linear, constant elevation measurement | | | | |

**Step 2:** Multiply the Buffer Value determined in Step 1 by the appropriate factor in the table below (based on the percentage of the wetland perimeter that is buffered). Please note the Area Protected by Buffer is based on the aquatic resource that will be protected on the proposed mitigation site. If the permit applicant does not have sufficient control to protect all or a portion of an aquatic resource, the proposed mitigation site should not be eligible for preservation or upland buffer credits.

**FINAL UPLAND BUFFER VALUE**

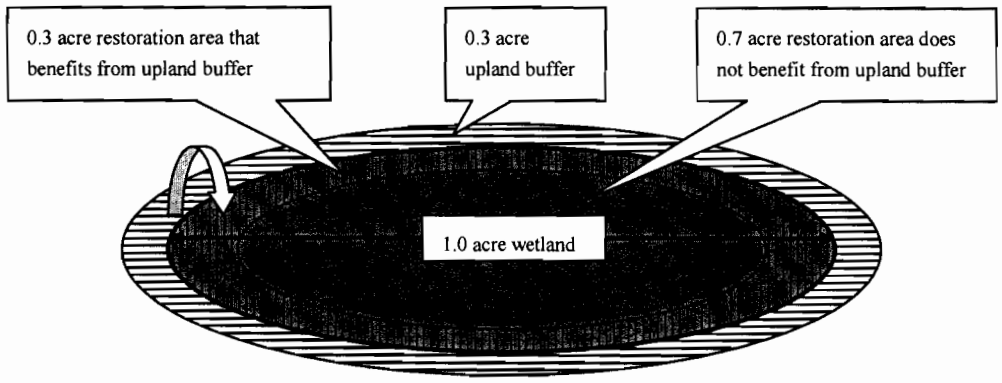
| Area Protected By Buffer | Upland Buffer Formula |
|---|---|
| More than 95% | 1.0 x Upland Buffer Value |
| 25 to 95% | $\frac{\text{\% Area Protected}}{100}$ x Upland Buffer Value |
| Less than 25% | Determined and allowed only on a case-by-case basis |

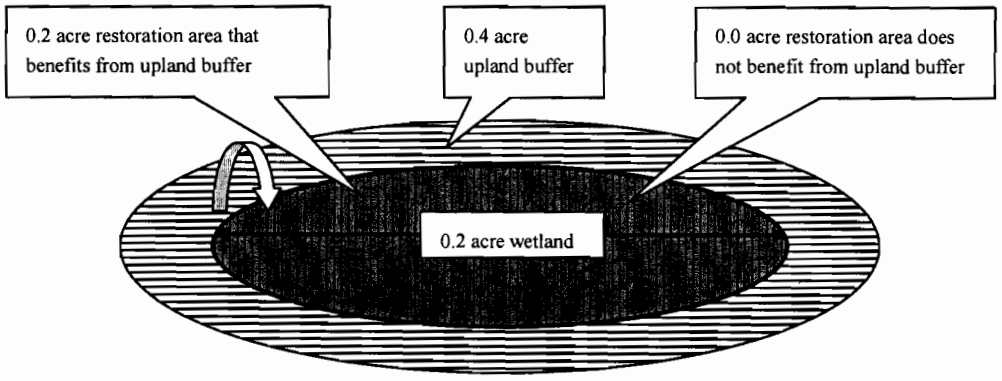
**Step 3:** Enter the Final Upland Buffer Value determined in Step 2 on the Proposed Wetland Mitigation Credit Worksheet.

The primary purpose of an upland buffer is to help protect restored, enhanced, or preserved aquatic resources. If the acreage of the upland buffer is greater than or equal to the acreage of the protected aquatic resource, the sum of the mitigation factors should be multiplied by the total acreage of the protected aquatic resource to determine the total mitigation credits.

If the acreage of the upland buffer is smaller than the acreage of the protected aquatic resource, the sum of the mitigation factors is multiplied by the total acreage of the upland buffer to determine the total mitigation credits for areas directly protected by the upland buffer. The remainder of the protected aquatic resource should be multiplied by the sum of factors (excluding the upland buffer value) in a separate column on the worksheet.

**Upland Buffer Diagrams**



## 4.0 TABLES AND WORKSHEETS

### REQUIRED WETLAND MITIGATION CREDIT TABLE

| FACTORS | OPTIONS | | | | | |
|---|---|---|---|---|---|---|
| Lost Type | Type C 0.2 | | Type B 2.0 | | Type A 3.0 | |
| Priority Category | Tertiary 0.5 | | Secondary 1.5 | | Primary 2.0 | |
| Existing Condition | Very Impaired 0.1 | Impaired 1.0 | | Partially Impaired 2.0 | | Fully Functional 2.5 |
| Duration | 0 to 1 year 0.2 | 1 to 3 years 0.5 | 3 to 5 years 1.0 | 5 to 10 years 1.5 | Over 10 years 2.0 | |
| Dominant Impact | Shade 0.2 | Clear 1.0 | Drain 2.0 | Dredge 2.5 | Impound/ Flood 2.5 | Fill 3.0 |
| Cumulative Impact | < 0.25 Acre 0.1 | 0.25-0.99 Acres 0.2 | 1.0-2.99 Acres 0.5 | 3.0-9.99 Acres 1.0 | ≥10.0 Acres 2.0 | |

**Note: The cumulative impact factor for the overall project should be included in the sum of factors for each impacted area on the Required Wetland Mitigation Credit Worksheet.**

### REQUIRED WETLAND MITIGATION CREDIT WORKSHEET

| Factor | Area 1 | Area 2 | Area 3 | Area 4 | Area 5 | Area 6 |
|---|---|---|---|---|---|---|
| Lost Type | | | | | | |
| Priority Category | | | | | | |
| Existing Condition | | | | | | |
| Duration | | | | | | |
| Dominant Impact | | | | | | |
| Cumulative Impact | | | | | | |
| Sum of Factors | $R_1$ = | $R_2$ = | $R_3$ = | $R_4$ = | $R_5$ = | $R_6$ = |
| Impacted Area | $A_1$ = | $A_2$ = | $A_3$ = | $A_4$ = | $A_5$ = | $A_6$ = |
| R x AA= | | | | | | |

**Required Wetland Mitigation Credits = $\Sigma$ (R x A) =** ____

## PROPOSED WETLAND MITIGATION CREDIT TABLE

| Factors | Options | | | | |
|---|---|---|---|---|---|
| Net Improvement | 0.0** ----------to ---------- 3.0 (see Section 3.0 for examples of potential values) | | | | |
| Upland Buffer | 0.0 ----------to ---------- 1.0 (see Section 3.0 for examples of potential values) | | | | |
| Credit Schedule | Not Applicable 0** | After 0.1 | Concurrent 0.3 | Before 0.5 | |
| Temporal Loss | Not Applicable 0** | 0 to 5 years -0.1 | 5 to 10 years - 0.2 | 10 to 20 years -0.3 | Over 20 years -0.4 |
| Kind | Out of Kind 0 | | In Kind 0.4 | | |
| Location | Case by Case 0 | Drainage Basin 0.1 | Adjacent 8-Digit HUC 0.2 | 8-Digit HUC 0.4 | |

**Use this option to calculate credit for Preservation.

## PROPOSED WETLAND MITIGATION CREDIT WORKSHEET

| Factor | Area 1 | Area 2 | Area 3 | Area 4 | Area 5 |
|---|---|---|---|---|---|
| Net Improvement | | | | | |
| Upland Buffer | | | | | |
| Credit Schedule | | | | | |
| Temporal Loss | | | | | |
| Kind | | | | | |
| Location | | | | | |
| Sum of Factors | $M_1$ = | $M_2$ = | $M_3$ = | $M_4$ = | $M_5$ = |
| Mitigation Area | $A_1$ = | $A_2$ = | $A_3$ = | $A_4$ = | $A_5$ = |
| M × A= | | | | | |

**Proposed Wetland Mitigation Credits = $\Sigma$ (M x A) =** ____

**Determination of Wetland Credits**
**Working Draft, Subject to Change**
**Last Revised, October 7, 2010**

## WETLAND MITIGATION SUMMARY WORKSHEET

**Mitigation Summary Worksheet For Permit Application #_____**

### I. Required Mitigation

| | | Credits | Acres |
|---|---|---|---|
| A. | Required Mitigation Credits | | |
| B. | Has the permittee protected the remaining on-site aquatic resources? The permittee may be eligible for a 25% reduction in Required Mitigation Credits (A x 0.25). | | |
| C. | Total Required Mitigation Credits = A – B | | |

### II. Third Party Mitigation Credit Summary

| | | Credits | Acres |
|---|---|---|---|
| D. | Restoration and/or Enhancement | | |
| E. | Preservation | | |
| F. | Total Third Party Mitigation = D+ E | | |

### III. Permittee-Responsible Mitigation Credit Summary

| | | Credits | Acres |
|---|---|---|---|
| G. | Restoration and/or Enhancement | | |
| H. | Preservation | | |
| I. | Total Permittee-Responsible Mitigation = G + H | | |

### IV. Proposed Mitigation Summary

| | | Credits | Acres |
|---|---|---|---|
| J. | Total Restoration and/or Enhancement = D + G | | |
| K. | Total Preservation = E + H | | |
| L. | Total Proposed Mitigation = F + I | | |

### V. Local Compensatory Mitigation Goals

| | Yes | No |
|---|---|---|
| PMC ≥ RMC<br>Are the Credits in Row L greater than or equal to Row C? | | |
| PMC Restoration and/or Enhancement ≥ 1/2 RMC<br>Are the Credits in Row J greater than or equal to 50% of Row C? | | |

## 5.0 SAMPLE PROJECT AND MITIGATION PLANS

The following sample project was created to help show permit applicants how to complete the Required Wetland Mitigation Credit Worksheet. This sample project describes several different types of adverse impacts to aquatic resources and the factors and values that are used to determine the Required Mitigation Credits. Please note that proposed projects are reviewed on a case by case to determine appropriate values for specific adverse impacts.

### 5.1 Sample Project

The proposed project consists of the construction of a single-family residential subdivision and golf course in a rapidly developing area of the coastal plain. The project site has historically been managed for timber production and primarily consists of upland pine plantation, bottomland hardwood swamp, and headwater forest.

Adverse Impact Area 1
Permanent fill in 5 acres of bottomland hardwood wetlands for the construction of improvements to existing access roads.

In this case, both the Priority Category (Tertiary) and the Lost Type (A) are determined by the wetland type, bottomland hardwoods. The Existing Condition (Partially Impaired) is based on the location (adjacent to existing roadways) and hydrology (road side ditches and culverts) of the wetland areas that will be impacted. The Dominant Impact (Fill) and Duration (Over 10 Years) are self explanatory because wetlands will be permanently converted into uplands to widen existing roadways. Cumulative Impact ($\geq$ 10 acres) is based on the total acreage of impacts for the entire project (Adverse Impact Area 1-4). These values are used to complete the Adverse Impact Area 1 portion of the worksheet.

Adverse Impact Area 2
Permanent clearing of 2 acres of fully functional bottomland hardwood wetlands for the construction of golf fairways.

As described above, both the Priority Category (Tertiary) and the Lost Type (A) are determined by the wetland type, bottomland hardwoods. The Existing Condition (Fully Functional) is based on the location and condition (undisturbed) of the wetland areas that will be impacted. The Dominant Impact (Clear) and Duration (Over 10 Years) are self explanatory because existing wetlands will be permanently cleared and converted into a scrub-shrub wetland system. Cumulative Impact ($\geq$ 10 acres) is based on the total acreage of impacts for the entire project (Adverse Impact Area 1-4). These values are used to complete the Adverse Impact Area 2 portion of the worksheet.

Adverse Impact Area 3
Permanent fill in 0.25 acres of a headwater forest to construct a recreational pond/impoundment.

The Priority Category (Tertiary) and the Lost Type (A) are determined by the wetland type, headwater forest. Headwater forest is considered tertiary priority because it does not fall into one of the designated priority categories. The Existing Condition (Slightly Impaired) is based on the condition (clear-cut) of the wetland areas that will be impacted. The Dominant Impact (Fill) and Duration (Over 10 Years) are self explanatory because existing wetlands will be filled to construct a permanent embankment. Cumulative Impact ($\geq$ 10 acres) is based on the total

acreage of impacts for the entire project (Adverse Impact Area 1-4). These values are used to complete the Adverse Impact Area 3 portion of the worksheet.

Adverse Impact Area 4
Permanent flooding in 3 acres of a headwater forest to construct a recreational pond/impoundment.

The Priority Category (Tertiary) and the Lost Type (A) are determined by the wetland type, headwater forest. As described above, headwater forest is considered tertiary priority because it does not fall into one of the designated priority categories. The Existing Condition (Slightly Impaired) is based on the condition (clear-cut) of the wetland areas that will be impacted. The Dominant Impact (Flood) and Duration (Over 10 Years) are self explanatory because existing wetlands will be filled to construct a permanent embankment. Cumulative Impact (≥ 10 acres) is based on the total acreage of impacts for the entire project (Adverse Impact Area 1-4). These values are used to complete the Adverse Impact Area 4 portion of the worksheet.

**REQUIRED WETLAND MITIGATION CREDITS WORKSHEET**

| | Area 1 (Roads) | Area 2 (Fairways) | Area 3 (Recreational Pond) | Area 4 (Recreational Pond) |
|---|---|---|---|---|
| Lost Type | 3.0 | 3.0 | 3.0 | 3.0 |
| Priority Category | 0.5 | 0.5 | 0.5 | 0.5 |
| Existing Condition | 2.0 | 2.0 | 2.0 | 2.0 |
| Duration | 2.0 | 2.0 | 2.0 | 2.0 |
| Dominant Impact | 3.0 | 1.0 | 3.0 | 2.5 |
| Cumulative Impact | 2.0 | 2.0 | 2.0 | 2.0 |
| R = Sum of Factors | 12.5 | 10.5 | 12.5 | 12.0 |
| AA = Impact Area | 5.0 | 2.0 | 0.25 | 3.0 |
| Product = R x AA | 62.5 | 21.0 | 3.125 | 36.0 |

**Required Wetland Mitigation Credits = (R x AA) = 122.6**

Please note the values in the mitigation worksheet are measured in tenths and wetland impacts are usually measured in hundredths (e.g. 0.25 acres of fill). Once the mitigation credits required for each activity have been added together, the Total Required Mitigation Credits should be rounded and expressed in tenths.

### 5.2 Proposed Compensatory Mitigation Plans

Since the purchase of mitigation credits from an approved mitigation bank or in-lieu fee program is presumed to be environmentally preferable, all compensatory mitigation plans must include information about the availability of mitigation credits. In addition, all permittee-responsible mitigation plans plans must include information about the watershed where the proposed project is located and potential mitigation sites that may meet the aquatic resource needs of the watershed (See Appendix E - Compensatory Mitigation Plan Template).

The following sections discuss two different compensatory mitigation plans that are designed to offset the adverse impacts associated with the Sample Project. Each of these compensatory mitigation plans includes information about assumptions that were used to determine whether a proposed mitigation plan is consistent with the Mitigation Rule. Please note that compensatory mitigation plans are evaluated on a case by case basis to determinine whether they offset adverse impacts associated with a proposed project.

5.2.1 Proposed Third Party Mitigation Plan

Once the permit applicant has calculated the required mitigation credits for the proposed project, they should use the Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS) at http://216.83.232.125:443/pls/htmldb/f?p=101 to obtain information about approved mitigation banks and in-lieu fee programs that may be able to provide the appropriate number and type of mitigation credits.

Since RIBITS is a national website the permit applicant must use the drop down menu in the bottom left hand corner of the RIBITS homepage to select Charleston District from the list of USACE (Corps) Districts. Once a permit applicant has selected the Charleston District they can use the navigation menu to obtain information about approved mitigation banks and ILF programs. Additional information about using RIBITS is available on the Mitigation page on the Charleston District's website.

The Sample Project requires the purchase of 122.6 freshwater wetland compensatory mitigation credits. Since more than 50% of the required mitigation credits must be restoration and/or enhancement credits, a proposed third party mitigation plan must consist of the purchase of at least 61.3 restoration and/or enhancement credits and a total of 122.6 mitigtaion credits. Examples that meet this requirement include: 1) the purchase 122.6 restoration credits, 2) the purchase of 40 restoration credits, 30 enhancement credits, and 52.6 preservation credits, or 3) the purchase of 61.3 enhancement credits and 61.3 preservation credits.

**Determination of Wetland Credits**
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## WETLAND MITIGATION SUMMARY WORKSHEET

**Permit Application # Sample Project – Third Party Mitigation Plan**

### I. Required Mitigation

| | | Credits | Acres |
|---|---|---|---|
| A. | Required Mitigation Credits | **122.6** | **11.65** |
| B. | Has the permittee protected the remaining on-site aquatic resources? The permittee may be eligible for a 25% reduction in Required Mitigation Credits (A x 0.25). | | |
| C. | Total Required Mitigation Credits = A – B | **122.6** | **N/A** |

### II. Third Party Mitigation Credit Summary

| | | Credits | Acres |
|---|---|---|---|
| D. | Restoration and/or Enhancement | 61.3 | TBD |
| E. | Preservation | 61.3 | TBD |
| F. | Total Third Party Mitigation = D+ E | 122.6 | TBD |

### III. Permittee-Responsible Mitigation Credit Summary

| | | Credits | Acres |
|---|---|---|---|
| G. | Restoration and/or Enhancement | | |
| H. | Preservation | | |
| I. | Total Permittee Responsible Mitigation = G + H | | |

### IV. Proposed Mitigation Summary

| | | Credits | Acres |
|---|---|---|---|
| J. | Total Restoration and/or Enhancement = D + G | 61.3 | TBD |
| K. | Total Preservation = E + H | 61.3 | TBD |
| L. | Total Proposed Mitigation = F + I | 122.6 | TBD |

### V. Local Compensatory Mitigation Goals

| | Yes | No |
|---|---|---|
| PMC ≥ RMC<br>Are the Credits in Row L greater than or equal to Row C? | X | |
| PMC Restoration and/or Enhancement ≥ 1/2 RMC<br>Are the Credits in Row J greater than or equal to 50% of Row C? | X | |

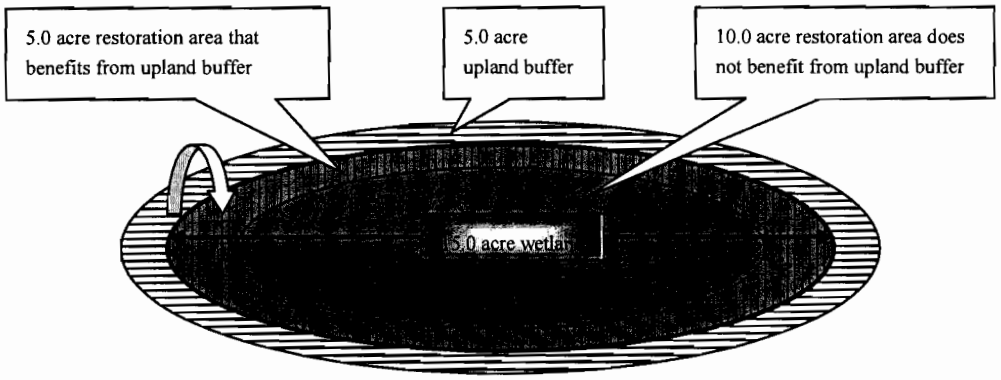
5.2.2 Proposed Permittee Responsible Mitigation (PRM) Plan

As described above, all compensatory mitigation plans must include information about the availability of mitigation credits. In addition, all PRM plans must include information about the watershed where the proposed project is located and potential mitigation sites that may meet the aquatic resource needs of the watershed (See Appendix E - Compensatory Mitigation Plan Template). For the purpose of this example we assume the appropriate number and type of mitigation credits are not available from a mitigation bank or in-lieu fee program and the proposed PRM plan addresses the aquatic resource needs of the watershed where the proposed project is located.

**Mitigation Activity 1**

The proposed compensatory mitigation plan includes the restoration of 15-acres of headwater forest on the project site that was previously converted to pine plantation. The proposed mitigation activities include the removal of existing pines, site preparation, planting native species, and plugging ditches. The majority of the restoration area will be protected by a 25-foot average width upland buffer (5 acres). In this example, the permit applicant is only able to establish an upland buffer around a portion of the wetland system (80%) because an existing cleared right-of-way is located along one side of the restoration area.

Net Improvement is considered Moderate (2.0) because the proposed mitigation plan will enhance hydrology within an existing wetland system and will re-establish the natural hardwood canopy. The proposed Upland Buffer is the minimum width necessary based on the adjacent land use (0.5) and only protects 80% of the restoration area (0.5*0.8 = 0.4). Credit Schedule (Concurrent) is based on the proposed mitigation work schedule. Temporal Loss (Over 20 years) is based on the time required to re-establish a fully functional wetland system with a mature hardwood canopy. Kind (In-Kind) is based on the wetland type (bottomland hardwood) that will be impacted on the project site and the wetland type (headwater forest) that will be restored at the mitigation site. Since the mitigation site is located on the project site, the Location is within the same 8-Digit HUC. These values are used to complete the Proposed Wetland Mitigation Credit Table.



**Proposed Wetland Mitigation Credit Table**

| Factor | Restoration (Buffer) | Restoration |
|---|---|---|
| Net Improvement | 2.0 | 2.0 |
| Upland Buffer | 0.4 | 0 |
| Credit Schedule | 0.3 | 0.3 |
| Temporal Loss | -0.3 | -0.3 |
| Kind | 0.4 | 0.4 |
| Location | 0.4 | 0.4 |
| Sum of Factors | $M_1 = 3.2$ | $M_1 = 2.8$ |
| Mitigation Area | $A_1 = 5$ | $A_1 = 10$ |
| M × A= | 16.0 | 28.0 |

**Total Restoration Credits = 44.0**

**Mitigation Activity 2**

The permit applicant has proposed to preserve 100-acres of partially impaired bottomland hardwood forest on the project site. As described in Section 3.0 (Existing Condition), functional recovery of partially impaired aquatic resources is expected to occur as a result of natural processes. The proposed preservation areas will be fully protected by a 50-foot average width upland buffer (15 acres).

For this example, we assume the Corps has reviewed the permit applicant's proposal and has determined this area is not an appropriate compensatory mitigation site because of concerns about the long-term success and sustainability of the proposed preservation area. Although the proposed preservation area is relatively large (115 acres including upland buffers), it is located within a rapidly developing area and will likely be adversely impacted by the development of the project site and adjacent properties.

Although this area is not eligible to generate compensatory mitigation credits, the permit applicant has proposed to avoid and minimize future impacts by protecting the existing jurisdictional wetlands and an upland buffer with a site protection instrument in order to receive a reduction in required mitigation credits. The potential 25% Mitigation Credit Reduction is discussed further in Section 5.2.3 of the main document.

The acreage of the preserved wetland (100 acres) is more than 3 times the acreage of the proposed adverse impacts (10.25 acres). As on the Mitigation Summary Worksheet (Sample Project - B) the Required Mitigation Credits (122.6) is reduced by 30.65 credits. Therefore, the Total Required Mitigation Credits is 91.95 credits.

Mitigation Credit Summary

The proposed restoration activities (Mitigation Activity 1) are expected to generate 44 mitigation credits. Since the proposed project is not located within the service area of an apporoved mitigation bank, the permit applicant must identify and conduct additional mitigation opportunities that generate 48 mitigation credits to meet the total required mitigation credits (91.95 credits). Since at least 50% of the Total Required Mitigation Credits must be generated by restoration and/or enhancement activities, the additional mitigation activities must generate at least 2 more restoration and/or enhancement credits. The remaining 46 mitigation credits may be generated by restoration, enhancement, or preservation activities.

**Determination of Wetland Credits**
**Working Draft, Subject to Change**
**Last Revised, October 7, 2010**

## WETLAND MITIGATION SUMMARY WORKSHEET

**Permit Application # Sample Project- Permittee-Responsible Mitigation Plan**

### I. Required Mitigation

| | | Credits | Acres |
|---|---|---|---|
| A. | Required Mitigation Credits | **122.6** | **11.65** |
| B. | Has the permittee protected the remaining on-site aquatic resources? The permittee may be eligible for a 25% reduction in Required Mitigation Credits (A x 0.25). | **30.65** | **100** |
| C. | Total Required Mitigation Credits = A – B | **91.95** | **TBD** |

### II. Third Party Mitigation Credit Summary

| | | Credits | Acres |
|---|---|---|---|
| D. | Restoration and/or Enhancement | | |
| E. | Preservation | | |
| F. | Total Third Party Mitigation = D+ E | | |

### III. Permittee-Responsible Mitigation Credit Summary

| | | Credits | Acres |
|---|---|---|---|
| G. | Restoration and/or Enhancement | 44 | 15 |
| H. | Preservation | | |
| I. | Total Permittee Responsible Mitigation = G + H | 44 | 15 |

### IV. Proposed Mitigation Summary

| | | Credits | Acres |
|---|---|---|---|
| J. | Total Restoration and/or Enhancement = D + G | 44 | 15 |
| K. | Total Preservation = E + H | | |
| L. | Total Proposed Mitigation = F + I | 44 | 15 |

### V. Local Compensatory Mitigation Goals

| | Yes | No |
|---|---|---|
| PMC ≥ RMC<br>Are the Credits in Row L greater than or equal to Row C? | | X |
| PMC Restoration and/or Enhancement ≥ 1/2 RMC<br>Are the Credits in Row J greater than or equal to 50% of Row C? | | X |